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State Water Resources Control Board

Division of Water Quality

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Arnold Schwarzenegger
Governor

December 18, 2008

To: Local Implementing Agencies and Interested Parties

BIODIESEL UPDATE

The purpose of this letter is to provide updated information to the State Water Resources Control Board's (State Water Board) letter ("Clarification of Regulations Applying To Biodiesel-E Stored In Underground Storage Tank [UST] Systems") dated February 28, 2008. This letter is intended primarily as a status report and may be periodically updated as new information becomes available.

Definition of Biodiesel

For the purpose of this letter "Biodiesel" is an alternative fuel that is derived from vegetable oils or animal fats and that meets Standard Specification D-6751 by the American Society for Testing and Materials (ASTM) and the United States Environmental Protection Agency (U.S. EPA) as a fuel and as a fuel additive under the Clean Air Act (42 U.S.C. Sec. 7401 et seq.). "Biodiesel blend" is a fuel that contains 1% to 99.9 % biodiesel blended with petroleum diesel fuel.

Regulation of USTs

California statutes require that the primary containment of a UST be compatible with the stored substance (such as a fuel and/or fuel additive), and that the secondary containment is constructed to prevent structural weakening because of contact with any released substance. In order to implement these statutes, the State Water Board's regulations require that: a) the design and construction of UST and piping be approved by an independent testing laboratory; b) an owner or operator use system components made of, or lined with, materials that are compatible with the hazardous substances stored in the tank; c) the components approved for the installation of a tank system, on and after July 1, 2004, include a list of compatible products tested and the measured permeation rate of those products; and d) the leak detection equipment be tested and function with the fuel stored.

Regulated Substance

California statutes also require that the presence of any quantity of any hazardous substance within the biodiesel is sufficient to designate the entire contents of the UST system a "hazardous substance" as defined in Chapter 6.7 of the California Health and Safety Code. Local implementing agencies and UST owners/operators should be aware that each delivery of biodiesel will be different, depending on variables such as the supplier, biodiesel feedstock, and quality controls employed during the manufacturing (transesterification) process, as well as petroleum introduced during the distribution process. Therefore, local implementing agencies are advised to assume that even 100% biodiesel is a regulated substance unless the particular batch of biodiesel being stored has been analyzed and determined to contain no antioxidants

that contain regulated substances, nor any biocides, fungicides, petroleum diesel, methanol, peroxides, or other hazardous substances.

Recent Legislative Activity

During the 2008 California legislative session, Senate Bill No. 1574 (SB 1574) (Florez) was introduced that would have allowed biodiesel blends up to B20 to be stored in USTs on an interim basis and under specified conditions. In allowing the storage of biodiesel blends up to B20, SB 1574 would have effectively exempted these blends from provisions of State Water Board regulations that require manufacturers to obtain third-party certification demonstrating that a fuel is compatible for storage in a UST before the fuel can be stored in a UST.

The Governor vetoed SB 1574 and noted in his veto message that "[a]s the Air Resources Board (ARB) moves forward with the adoption and implementation of the Low Carbon Fuel Standard, the issue of the adequacy of underground storage tanks to safely store alternative fuels will continue to arise." The veto message goes on to state that "we need to be prepared to handle this situation in a manner that neither impedes the deployment of alternative fuels, nor sacrifices our other environmental goals, such as improved water quality." As a result, the Governor directed the Secretary of the California Environmental Protection Agency (Cal/EPA) to "coordinate with the State Water Resources Control Board and the ARB to assess this issue and that each entity, as appropriate, establish biodiesel and underground storage tank compatibility standards that can be consistently applied throughout the state."

In response to the Governor's veto message, Cal/EPA and State Water Board staff have met with representatives from the biodiesel industry on several occasions to clarify the issues of concern, discuss the necessary testing that is required by state law and regulation prior to storing biodiesel in USTs, and to develop actions that both the industry and the State Water Board will take to facilitate the completion of the necessary compatibility and leak detection testing so that biodiesel can be routinely stored in USTs in California.

Fuel Specifications and Independent Laboratory Approval

Since our correspondence in February 28, 2008, ASTM published ASTM D6751-08 standard fuel specification for biodiesel (B100). This specification prescribes the required properties of biodiesel fuels, and that the biodiesel shall be mono-alkyl esters of long chain fatty acids derived from vegetable oils and animal fats.

Shortly following the ASTM publication D6751-08 fuel specification, fuel specification ASTM D975-08 was updated to include 5% biodiesel or B5. Therefore, for ASTM purposes, B5 can be considered the same as diesel in terms of fuel specifications.

Subsequently, the question has arisen as to whether the UL Standards and UL Certification for petroleum diesel storage in USTs can appropriately be applied to biodiesel blends of up to B5. In California, most manufacturers utilize Underwriters Laboratories (UL) for third party approval of USTs and piping. Cal/EPA Secretary Linda Adams and the State Water Board have requested an expedited determination from UL clarifying whether its diesel certification also now covers B5. Both agencies are hopeful that UL will make a determination very soon. If UL determines that diesel fuels containing up to B5 are equivalent to petroleum diesel for purposes

of UL Standards and UL Certification, then the State Water Board would regard UL's decision as a compatibility determination for the storage of up to B5 in UST's.

Biodiesel Subject to the Petroleum Storage Fee

All biodiesel blends contain petroleum and are therefore subject to the petroleum storage fee and other provisions of the Barry Keene Underground Storage Tank Cleanup Fund Act of 1989 (UST Cleanup Fund). Owners/operators of USTs storing these products are eligible to apply to the UST Cleanup Fund to obtain assistance with the cleanup costs that may result if these USTs leak. Of course, all other applicable UST Cleanup Fund eligibility requirements must be satisfied to receive funding, including compliance with all applicable UST laws.

Present and Future

In the interim, before UL has made its determination regarding B5, local implementing agencies should give consideration to the advancement in design, construction, and monitoring of UST's installed on and after July 1, 2004 and which meet the requirements of Health and Safety Code, Section 25290.1. State Water Board staff believe that the storage of B5 in these newer UST systems poses a low risk of a release to the environment. However, the evolving regulation of biodiesel and other alternative fuels does not diminish or otherwise reduce a UST owner's/operator's responsibility to abate the effects of any release from a UST system.

If UL determines that B5 can be considered petroleum diesel for purposes of compatibility and the functional leak detection testing for use with biodiesel is completed, then B5 can be stored in USTs in California. When a determination is made by UL, the State Water Board will promptly notify local implementing agencies and provide implementation guidance as needed.

If you have any questions or concerns regarding this letter please contact Ms. Laura Fisher-Chaddock at (916) 341-5870 or Ichaddock@waterboards.ca.gov.

Sincerely,

Original Signed By

James George Giannopoulos, Chief
Groundwater Quality Branch



County of San Diego

DEPARTMENT OF ENVIRONMENTAL HEALTH HAZARDOUS MATERIALS DIVISION

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***** ADVISORY BULLETIN *****

The Hazardous Materials Division (HMD) of the Department of Environmental Health (DEH) is the Certified Unified Program Agency (CUPA) in the County of San Diego. The HMD, as the CUPA, is responsible for implementing and enforcing the California Underground Storage Tank (UST) laws and regulations. This advisory contains important information regarding compatibility concerns for Biodiesel and Biodiesel blended fuels stored in UST systems.

The State Water Resources Control Board sent a letter (attached) to all regulatory agencies in February 2008, indicating that UST systems storing biodiesel or biodiesel blends are subject to UST regulation. Therefore, owners and/or operators of USTs must demonstrate material compatibility in accordance with Chapter 6.7, Section 28281(C)(2) of the California Health and Safety Code (HSC), prior to storing biodiesel or biodiesel blends.

You, as the UST owner/operator are responsible for ensuring that your UST system is compatible with the stored product at all times. This compatibility requirement includes all blends of diesel and biodiesel, as well as 100% biodiesel (B100). Currently there are no exemptions nor are there special requirements for any of these types of fuels. Biodiesel and Biodiesel mixtures stored in UST systems are subject to exactly the same requirements as all other fuels. USTs systems are deemed compatible with a given fuel when there is written approval by Underwriter's Laboratories (UL) or other recognized national or international independent third party testing organization. Currently, the SWRCB and HMD are not aware that UL, or any other independent third party testing organization has approved any UST systems as being compatible for storing any concentration of biodiesel blended fuels or B100.

To reduce the likelihood of failure of your UST system due to incompatibility with biodiesel or biodiesel fuel blends, the HMD is advising you to contact your UST and piping manufacturers to find out whether their equipment has been tested by UL or another independent third party testing organization and found to be compatible with biodiesel blended fuels or B100. Be advised that continued use of a non-compliant UST system may result in revocation of your UST operating permit and affect your eligibility for the UST Clean up fund in the event your UST system were to fail and have an unauthorized release.

If you suspect that your UST system may be experiencing structural problems or has had an unauthorized release as a result of biodiesel storage, immediately remove the product from the UST system and report it to the Hazardous Materials Duty Desk at 619-338-2231. HMD will continue to advise UST owners and operator on any further developments. For additional information or if you have any questions about the information contained in this advisory bulletin, please contact Robert Rapista, Underground Storage Tank Group Supervisor at (619) 338-2309.



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Arnold Schwarzenegger
Governor

February 28, 2008

To: Local UST Regulatory Agencies and Interested Parties

CLARIFICATION OF REGULATIONS APPLYING TO BIODIESEL-E STORED IN UNDERGROUND STORAGE TANK (UST) SYSTEMS

There are several chemically different versions of “biodiesel” all of which are produced from the same feedstock: animal fats, raw vegetable oils, and recycled cooking greases. The most common and widely distributed version is a fuel composed of mono-alkyl esters of long chain fatty acids produced through a transesterification process, which we refer to as Biodiesel-E to indicate it is an “ester” version. A second version reportedly under development is an alkane fuel produced via the Fisher-Tropsch process and depolymerization, which we refer to as Biodiesel-A. This letter addresses only Biodiesel-E described below as “biodiesel”, as Biodiesel-A is not yet available.

Biodiesel can be used, either as a pure fuel or blended with conventional petroleum-based diesel fuel, to power diesel engines. The use of biodiesel is expected to increase in the coming years as a result of the Energy Independence and Security Act signed into law in December 2007, which mandates an increase of renewable fuels from 6 billion gallons in 2007 to 36 billion gallons by 2022. In anticipation of this increased use, the State Water Resources Control Board (State Water Board) is issuing this letter to clarify how existing state laws and regulations apply to underground storage tank (UST) systems storing biodiesel and biodiesel blends. This letter supersedes any previous correspondence regarding biodiesel.

1. Are UST systems storing biodiesel or biodiesel blends subject to regulation?

Yes. Even biodiesel that has been manufactured in strict accordance with ASTM D6751-07a (March 2007) standards for biodiesel usually meets the definition of “hazardous substance” provided in the California Health and Safety Code, Chapter 6.7, section 25281(h), because the most recent ASTM biodiesel specifications¹ allow 0.2 %v/v methanol, which is a hazardous substance. Biodiesel manufactured out of specification has an even higher probability of containing hazardous substances, and to date most biodiesel has been manufactured out of specification².

¹ ASTM D6751-07a (March 2007)

² In 2007 the U.S Department of Energy, National Renewable Energy Laboratory published the results of tests conducted on B100 samples obtained from biodiesel manufacturers around the U.S. and found that approximately 60% DID NOT meet the ASTM D6751-07(a) standard for biodiesel including out of specification peroxide levels.

Additionally, biodiesel manufacturers recommend the addition of antioxidants to stabilize the fuel, most of which are hazardous substances. Manufacturers also add, or recommend adding, other regulated hazardous substances such as biocides and fungicides to reduce microbial activity. Without the addition of these hazardous substances, biodiesel may oxidize and form peroxides which are also on the OSHA Special Health Hazard Substance List because peroxides can be highly explosive and mutagenic. Biodiesel may also contain toxic remnants of the manufacturing process, such as methanol or sodium hydroxide, and other contaminants such as peroxides. Finally, even “100%” biodiesel may contain small amounts of petroleum diesel. This occurs when petroleum diesel is intentionally added to obtain a desired physical property (lubricity, viscosity, etc.), or when biodiesel is inadvertently contaminated as it moves through a distribution network (bulk tank, piping, delivery truck, etc.) that is shared with petroleum diesel.

The presence of any quantity of any hazardous substance within the biodiesel is sufficient to designate the entire contents of the UST system a “hazardous substance” as defined in the Health and Safety Code. Therefore, local regulatory agencies are advised to assume that even “100%” biodiesel is a hazardous substance unless the particular batch of biodiesel being stored has been analyzed and determined to contain no antioxidants that contain regulated substances, nor any biocides, fungicides, petroleum diesel, methanol, peroxides, or other hazardous substances. Local regulatory agencies and UST owners/operators should be aware that each delivery of biodiesel will be different, depending on variables such as the supplier, biodiesel feedstock, and quality controls employed during the manufacturing (transesterification) process.

2. Would UST systems storing “100%” biodiesel be exempt from regulation because the small amount of hazardous substance found in the stored product could be considered a “*de minimis*” concentration?

No. California’s UST laws and regulations do not provide a *de minimis* exemption, meaning any concentration of hazardous substance stored in an UST is subject to regulation. Federal UST regulations³ do provide an exclusion for UST systems storing a *de minimis* concentration of regulated substance. However, even examples given in the preamble to this federal regulation include substances with exceedingly small concentrations, such as chlorine in drinking water and swimming pools (generally a few parts per million) (53 Fed Reg. 37108 – 37109 (1988)). Based on the examples noted in the preamble we believe that it would be inappropriate to apply a *de minimis* exemption to biodiesel, even under federal regulations.

³ 40 CFR, §280.10(b)(5)

3. Is switching from petroleum diesel to a biodiesel blend considered a change of stored substance?

Yes. When any percentage of biodiesel is added to an UST system that has been permitted to store petroleum diesel fuel, it is considered a change of stored substance. California Code of Regulations, Title 23, section 2711 requires the UST owner or operator to inform the local regulatory agency of the hazardous substances that are stored, or are proposed to be stored, in the UST system. Section 2711 also requires the owner or operator to notify the local agency of any changes to that information within thirty days unless required to obtain approval before making the change. We strongly advise local regulatory agencies to require notification from the UST owner/operator PRIOR to any change of stored substance. This will allow the local agency to determine ahead of time whether or not the UST system is suitable for storing the new substance.

4. Must an owner or operator of a UST demonstrate material compatibility prior to storing biodiesel or biodiesel blends?

Yes. California Health and Safety Code, Chapter 6.7, requires primary containment to be compatible with the product stored⁴. This means that the primary containment must retain its chemical and physical properties upon contact with the stored substance for the life of the UST system under normal operating conditions. California Health and Safety Code, Chapter 6.7, also requires that secondary containment be designed to prevent structural weakening as a result of contact with the stored substance⁵. These requirements apply to any regulated UST system installed after 1984, including those storing biodiesel or biodiesel blends. The UST owner/operator is ultimately responsible for ensuring that their UST system is compatible with the stored product at all times.

If you have questions regarding this document, please contact Laura Fisher-Chaddock at (916) 341-5870 (lfchaddock@waterboards.ca.gov) or Robert Hodam at (916) 341-5871 (rhodam@waterboards.ca.gov).

Sincerely,

Original signed by

Kevin L. Graves, P.E.
Underground Storage Tank Program Manager

⁴ §25291(a)(1), §25290.1(c)(1), §25290.2(c)(2)

⁵ §25291(a)(2), §25290.1(c)(2), §25290.2(c)(2)